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Indian Standard

SPECIFICATION FOR COTTON-KNITTED STRING VESTS

First Reprint FEBRUARY 1978

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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

July 1969

AMENDMENT NO. 2 MAY 2004
TO
IS 4809 : 1968 SPECIFICATION FOR COTTON-KINTTED STRING VESTS

[*Page* 6, *Table* 2, *Sl No.* (iii), *col* 3] — Substitute '4 ±0 5 mm' *for* '4 $^{+0}_{-0\ 3}$ mm

(TX 10)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 1 APRIL 1978
TO
IS : 4809 - 1968 SPECIFICATION FOR COTTON - KNITTED STRING VESTS

Alterations

[***Page*** 6, *Table* 2, *col* 4 *against Sl No.* (v)] — Substitute '**IS** : 1383 - 1977† (**Mild method**)' *for* 'A - 6'.

(***Page*** 11, *clause* **A** - 6) — Delete.

Addendum

(*Page* 6, *Table* 2) — Add the following foot-note at the end:

'†**Method** for determination of scouring loss in grey and finished cotton textile materials (*first revision*).'

(TDC 15)

Printed at Simco Printing Press. Delhi, India

Indian Standard

SPECIFICATION FOR COTTON-KNITTED STRING VESTS

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Indian Standard

SPECIFICATION FOR COTTON-KNITTED STRING VESTS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 8 November 1968, after the draft finalized by the Hosiery Sectional Committee had been approved by the Textile Division Council.

0.2 String vest is an undershirt for cold weather made of open-mesh (of square shape) knitted fabric with welts (made of cotton stockinette) at the neck, armholes and bottom

0.3 This standard is based on IND/TC/4967(b) 'Specification for vest, string, knitted' issued by the Ministry of Defence, Government of India.

0.4 This standard contains clauses **4.3.1**, **5.1**(d), **6.1** and **7.2** which call for agreement between the buyer and the seller for permitting him to use his option for selection to suit his requirements.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS: 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements of cotton-knitted string vests, bleached.

1.2 This standard does not prescribe the general appearance, lustre and feel of vests nor does it specify the degree of whiteness of vests (*see also* **4.3**).

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given as in IS: 3596-1967† shall apply.

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*Rules for rounding off numerical values (*revised*).

†Glossary of terms relating to hosiery.

3. MANUFACTURE

3.1 Yarn

3.1.1 Approximate count and breaking load for the yarn for body are given below :

Approximate Count	*Breaking Load*
	kg
50 tex × 3 (cotton count 12s/3)	1·5
50 tex × 2 (cotton count 12s/2)	1·0

3.1.2 Approximate count shall be 30 tex (20s cotton count) for yarn for welting.

3.2 Fabric

3.2.1 *For Body* — Open-mesh (of square shape) fabric knitted by working either two threads as one of 50 tex × 3 or three threads as one of 50 tex × 2 (*see* **3.1.1**) on warp-knitting machines.

3.2.2 *For Welting* — Stockinette (plain-knitted fabric) should be of the following constructional particulars:

Number of wales/5 cm 50, *Min*
Number of courses/5 cm 65, *Min*

3.3 Seams and Stitches — All the joinings should be done with flatlock stitches using bleached cotton sewing thread conforming to Variety No. 16 of IS : 1720-1960* [approximate count 9·8 tex × 6 (60s/6 cotton count)] throughout or in combination with sewing thread conforming to Variety No. 2 of IS : 1720-1960* [approximate count 21 tex × 2 (28s/2 cotton count)] as covering thread.

3.3.1 The number of stitches per centimetre shall not be less than 4.

3.4 String Vest

3.4.1 String vest should be generally as shown in Fig. 1 fabricated out of single piece of mesh fabric (*see* **3.2.1**).

3.4.2 The weltings around the neck, armholes and bottom should be made by folding double the stockinette strips which have been cut to size. They should be stitched in position after turning in free edges by 1 cm.

4. REQUIREMENTS

4.1 Dimensions and Weight — The dimensions and weight of vests of a particular size shall conform to the requirements of Table 1.

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*Specification for cotton sewing thread, bleached or dyed. (Since revised).

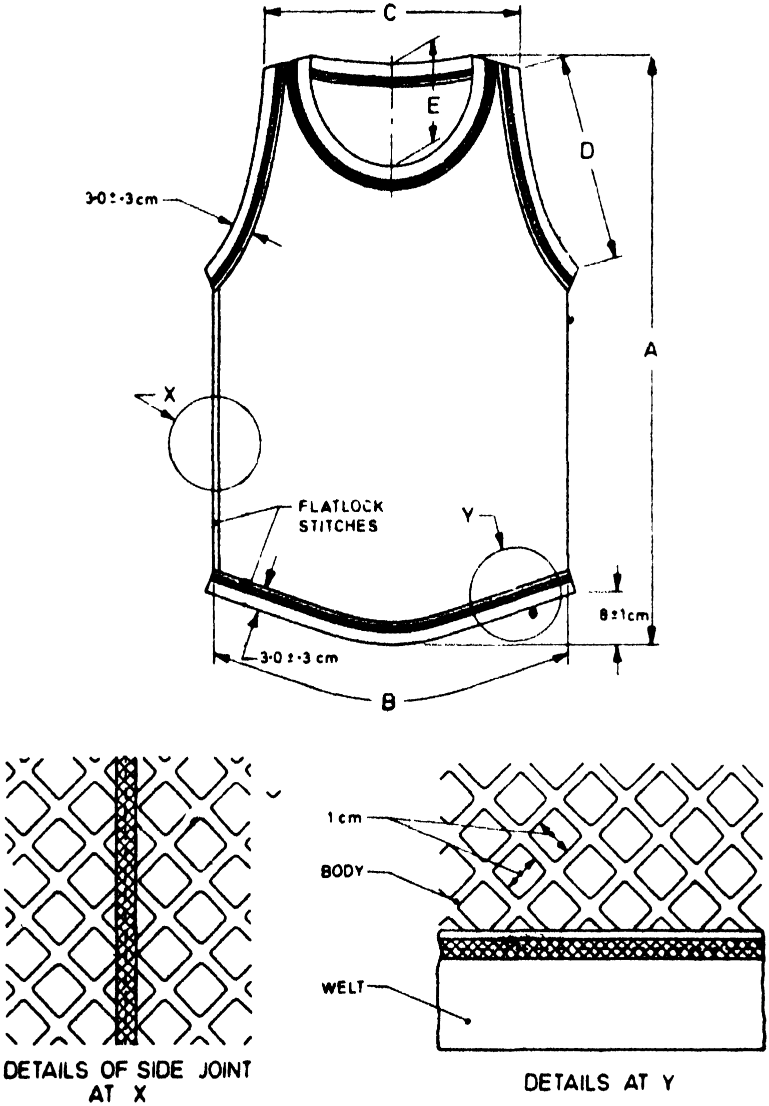

Fig. 1 A Typical String Vest

TABLE 1 DIMENSIONS AND WEIGHT OF STRING VESTS

(*Clause* 4.1)

SIZE	*LENGTH OF VEST	*CIRCUMFERENCE OF THE WELT AT BOTTOM	*WIDTH ACROSS SHOULDER	*LENGTH OF ARMHOLE	*DEPTH OF NECK-OPENING	†WEIGHT PER VEST
	A	*B*	*C*	*D*	*E*	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	cm	cm	cm	cm	cm	g
Small	70	94	30·0	25·0	12	230
Large	75	104	33·0	27·0	14	260
Tolerance	±4	±5	±1·5	±1·5	±1	+25 −10

*Determined as in **A-2**.

†Determined as in **A-3**.

4.2 Other Requirements — The vests shall conform to the other requirements given in Table 2.

TABLE 2 OTHER REQUIREMENTS OF STRING VESTS

SL NO.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST
(1)	(2)	(3)	(4)
i)	Total number of meshes around the vest:		
	a) Small size	56 ± 3	*See* Note 1
	b) Large size	62 ± 3	
ii)	Average size of the mesh	10 × 10 $^{+0}_{-2}$ mm	*See* Note 2
iii)	Thickness of the mesh fabric	4 $^{+0}_{-0·3}$ mm	**A-4**
iv)	Average breaking load of mesh fabric	40 kg, *Min*	**A-5** (*see also* Note 3)
v)	Scouring loss	2 percent, *Max*	**A-6**
vi)	*p*H value of aqueous extract	Between 6 and 8	Cold method of IS : 1390-1961*

NOTE 1 — Number of meshes around the vest should be counted along a straight horizontal line between armpit and bottom.

NOTE 2 — Size of the mesh should be measured by adjusting it to take the square shape (using minimum force necessary).

NOTE 3 — No test should show breaking load less than 30 kg.

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*Methods for determination of *p*H value of aqueous extracts of textile materials.

4.3 Sealed Sample — If, in order to illustrate or specify the indeterminable characteristics, such as general appearance, degree of whiteness, lustre and feel of string vests, a sample has been agreed upon and sealed, the supply shall be in conformity with the sample in such respects.

4.3.1 The custody of the sealed sample shall be a matter of prior agreement between the buyer and the seller.

5. MARKING

5.1 A suitable cloth label shall be securely attached to each vest at the inside of the neck-opening (back side) on which shall be indicated the following:

a) Size (SMALL or LARGE);

b) Manufacturer's name, initials or trade-mark, if any;

c) Year of manufacture; and

d) Any other information required by the buyer.

NOTE — The coloured yarn used in making the labels should have colour fastness rating '4 or better' to washing when tested by the method prescribed in IS : 687-1966*.

5.1.1 The vests may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

6. PACKING

6.1 Vests shall be packed in bales or cases as agreed to between the buyer and the seller and in accordance with IS:3086-1965† or IS:3325-1965‡ as the case may be.

7. SAMPLING

7.0 The sampling procedure given below shall give desired protection to the buyer and the seller provided the lot submitted for inspection is homogeneous. To achieve this, the manufacturer shall maintain system of process

---

*Method for determination of colour fastness of textile materials to washing: Test 1 (*first revision*).

†Code for seaworthy packaging of cotton hosiery yarn and goods.

‡Code for Inland packaging of cotton hosiery yarn and goods.

control at all stages of manufacture ensuring that the string vests tendered by him for inspection comply with the requirements of this standard in all respects.

NOTE — For effective process control, the use of statistical quality control techniques is recommended and a helpful guidance in this respect may be obtained from IS : 397-1952[*].

7.1 In any consignment, all the vests of the same size, manufactured from the same count and quality of yarn and delivered to a buyer against one despatch note shall constitute a **lot**.

7.1.1 The conformity of a lot to the requirements of this specification shall be determined on the basis of the tests carried out from the samples selected from the lot.

7.2 Unless otherwise agreed to between the buyer and the seller, a number of vests depending upon the size of the lot shall be selected at random from the lot in accordance with col 2 of Table 3 to constitute the **gross sample.**

TABLE 3 SAMPLE SIZE AND PERMISSIBLE NUMBER OF NON-CONFORMING VESTS

No. of Vests in the Lot	Non-destructive Testing		Destructive Testing	
	No. of Vests to be Inspected	Permissible No. of Non-conforming Vests	No. of Vests to be Inspected	Permissible No. of Non-conforming Vests
(1)	(2)	(3)	(4)	(5)
Under 50	10	0	2	0
51 to 100	20	1	2	0
101 to 200	30	2	2	0
201 to 300	40	3	3	0
301 to 500	50	3	5	0
501 to 800	70	4	7	0
801 to 1300	110	8	10	0
1301 to 3200	150	8	15	1
3201 and above	220	11	30	2

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[*] Method for statistical quality control during production by the use of control chart (*tentative*). (Since revised and split into various parts).

7.3 The number of tests and criteria for conformity for each of the characteristics shall be as follows:

Characteristic	*No. of Tests*	*Criterion for Conformity*
Dimensions, weight, number of meshes around the vests, average size of the mesh and such requirements as specified through sealed sample (*see* **4.3**).	*see* col 2 of Table 3	Non-conforming vests not to exceed the corresponding number given in col 3 of Table 3.
Thickness, breaking load, scouring loss and pH value	*See* col 4 of Table 3	Non-conforming vests not to exceed the corresponding number given in col 5 of Table 3.

APPENDIX A

(*Tables* 1 *and* 2)

METHODS OF TESTS

A-1. CONDITIONING OF TEST SPECIMENS AND ATMOSPHERIC CONDITIONS FOR TESTING

A-1.1 Conditioning — Prior to evaluating breaking load of open mesh fabric, the test specimens shall be conditioned in the standard atmosphere at 65 ± 2 percent RH and 27° ± 2°C temp (*see also* IS : 196-1966*). For evaluating other characteristics, the test specimens shall preferably be conditioned in the standard atmosphere.

A-1.1.1 When the test specimens have been left in such an atmosphere for 24 hours in such a way as to expose, as far as possible, all portions of the specimens to the atmosphere, they shall be deemed to have reached moisture equilibrium.

A-1.2 Atmospheric Conditions for Testing — The test, to evaluate the breaking load, shall be carried out in a standard atmosphere (*see* **A-1.1**) and the other tests shall preferably be carried out in the standard atmosphere.

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*Atmospheric conditions for testing (*revised*).

A-2. DIMENSIONS

A-2.1 Procedure — Take each vest constituting the test specimens. Lay it flat on a table. Remove all creases and wrinkles without distorting it and measure the dimensions as given in Table 1.

A-3. WEIGHT

A-3.1 Drying Oven — suitable for drying the specimen to constant weight at 105° to 110°C temperature and equipped with a weighing balance arranged to weigh with an accuracy of 0·5 g while the specimen is suspended within the drying chamber; the holder of the specimen shall be of such type as to ensure free access of dry air to all portions of the specimen.

A-3.2 Procedure — Take each vest from the vests constituting test specimens. Dry it to constant weight in the drying oven and determine its weight.

NOTE — Constant weight shall be deemed to have been reached if the difference between two successive weighings at an interval of 20 minutes is less than 0·05 percent of the first of the two weighings.

A-3.3 Determine the weight of a vest as given below:

$$W = C \left(1 + \frac{R}{100}\right)$$

where

W = weight, in g, of a vest;

C = oven-dry weight, in g, of a vest as determined in **A-3.2**; and

R = moisture regain value of 8·5 percent for cotton.

NOTE — If the correct moisture regain value is not available it should be taken as 8·5.

A-4. THICKNESS

A-4.1 Dial Gauge — a dead weight type dial gauge graduated to read directly to an accuracy of 0·02 mm having circular presser foot 9 cm dia and with moving parts connected therewith so as to apply a load of 7 g/cm². The surface of the presser foot and the anvil should be plain, smooth and horizontal.

A-4.2 Test Specimen — measuring 12 cm square, of the fabric, free from knots, lumps or raised places.

A-4.3 Procedure — Place the test specimen, centrally on the anvil of the gauge, making the meshes of the fabric approximately square by giving a slight lateral stretch. Lower the presser foot gently on the test specimen and allow it to rest for 10 seconds. Then take the dial reading to the nearest 0·02 mm.

A-4.4 Calculations — Repeat the procedure on 5 test specimens taken from different portions of the vest and calculate the mean thickness.

A-4.4.1 Report the value obtained as in **A-4.4** as the thickness of vest.

A-5. BREAKING LOAD

A-5.1 Test Specimens — Lay the fabric flat on a plain surface and close the meshes so that all the consecutive strands from the portion to be subjected to test lie vertically. Cut the joints outside the first and seventh strand to a distance of 30 cm to obtain a test specimen 30 cm long and comprising of 7 strands; 5 of which are effective (first and seventh strands are non-effective since the cuts are made at the joints).

A-5.1.1 Prepare 5 such test specimens from different portions of the vests constituting test specimens.

A-5.2 Procedure — Determine the breaking load of each of the test specimen as prepared in **A-5.1** by following the procedure given in IS : 1969-1961*

Note — While determining the breaking load, it should be ensured that the test specimens are clamped in the jaws with the strands touching each other so that the tensile force on the strands is substantially in the vertical direction.

A-6. SCOURING LOSS

A-6.1 Take each vest from the vests constituting test sample. Cut its bottom portion. Taking an end of any one of the cut end, unravel the yarn from the vest. Cut the yarn so removed into pieces of about 15 cm long and then form the cut pieces into convenient bundles. Continue unravelling and cutting off the pieces till about 5 g of yarn in the bundles is accumulated. These bundles shall constitute the test specimen. Determine the scouring loss of the test specimen by following the procedure prescribed in **6.2.2** to **6.2.5** of IS : 1383-1960†.

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*Method for determination of breaking load and elongation at break of woven fabric (by constant-rate-of-traverse machine). (Since revised).

†Method for determination of scouring loss in grey and finished cotton textile materials.

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